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Energy, Sustainability, and the Environment in Iceland: A STEM-Focused Program for the Experiment in International Living

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Abstract

Since 1932, The Experiment in International Living (The Experiment or EIL) has been one of the most respected frontrunners for providing high school educational programs that strengthen cultural awareness and engage and empower participants to think critically about global issues. Since its inception, over 70,000 students have participated in an Experiment program (World Learning, 2016a). Experience gained working as a group leader for The Experiment in summer 2015 helped in the development of a needs assessment that uncovered a significant gap in thematic offerings. Examining the STEM trends in the international education field and interviewing staff on requirements and issues in programming and curriculum, the following proposal strongly demonstrates the need for a new hard science-focused program for The Experiment in International Living.

This proposal focuses on the development of a new STEM-focused outbound summer program to Iceland with an excursion to Greenland. Iceland's location in the Arctic Circle and proximity to Greenland make it an excellent location for students to learn about climate change, geology, and sustainability. Following The Experiment structure, this proposal outlines the curriculum, goals and objectives, itinerary, and budget for the Energy, Sustainability, and the Environment in Iceland program. This is a four-week outbound summer high school program that offers students a unique opportunity to explore Iceland's diverse geology, topography and unique historic use of geothermal energy and hydropower.

Introduction

Background

For over 80 years The Experiment in International Living has provided students with immersive, experiential education programs overseas. During summer 2016, The Experiment in International Living (referred to in this proposal as The Experiment) will run 33 programs worldwide. A typical program includes approximately 10-15 students, between ages 15-19, from a variety of different backgrounds (World Learning, 2016b). In 2015, Experimenters (as participants are often called) came from 37 states and 11 different countries (World Learning, 2016b). The goals of The Experiment as an organization are to:

1. Enable high school students to connect and engage another culture and society;
2. Explore the host country through hands-on experiences in local communities and living with host families;
3. Create a deeper awareness and sensitivity to global issues shaping diverse communities and regions visited;
4. Develop teamwork, intercultural communications, and leadership and language skills while on the program; and
5. Foster understanding and build relationships across ethnic, religious, and national groups within The Experiment groups and with their host country (The Experiment in International Living, 2015a, p. 79).

Almost all Experiment programs follow a comprehensive model designed to engage students in cross-cultural experiences and maximize the cohesion and well-being of the group. The four-part program structure includes the orientation, homestay,

thematic focus, and reflection. Every year, The Experiment seeks to add new programs to themes and offer new locations to stay competitive. The Energy, Sustainability, and the Environment in Iceland is a proposal for a four-week, science-focused summer program for The Experiment in International Living, which The Experiment will add to its Sustainability and the Environment programs. This program will follow the common four-part structure of The Experiment: orientation in Reykjavik, the thematic focus entitled "Energy, Sustainability, and the Environment in Iceland" with an excursion to Greenland, a homestay in Isafjordur, and the reflection and program closing in Reykjavik.

Rationale

Thematic foci are used to categorize programs, build awareness of global issues, and engage students' interests in important aspects of their host country culture (World Learning, 2016c). The four thematic foci are Arts and Social Change; Sustainability and the Environment; Peace, Politics and Human Rights; and Language and Cultural Discovery. Of the 33 programs to run in summer 2016, there are four programs under Arts and Social Change. Including the Netherlands program added in 2015, there are six programs that deal with Peace, Politics and Human Rights. Fourteen programs fall under the Language and Cultural Discovery theme and only seven programs under the Sustainability and the Environment theme. Part of this is because The Experiment did not introduce the categorization of themes or thematic focus until a few years ago. Before then, programs were not categorized, and most new programs in the past were built out of the demand for only language skills or destination, now strategically marketed as Language and Cultural Discovery. Reviewing the programs, it is important to look at

where there are larger gaps in themes and when programs were added, so that the any major gaps will be considered before proposing new programs.

Of the seven Sustainability and the Environment programs, Tanzania: Wildlife, Ecology, and Culture will be new for 2016. Currently, this theme includes five ecology-focused programs, a local foods program, and an outdoors community-service program, but no programs that offer physical science themes. Considering the upward trend of STEM majors in study abroad and examining the gaps in Experiment programs, this curriculum design focuses heavily on objectives for group leaders and in-country partners to facilitate learning activities to meet the third goal of The Experiment. The Energy, Sustainability, and the Environment in Iceland program will include soft science and life science, but the core focus will be physical sciences. Participants will concentrate on the global issue of climate change, its effects, and the cultural and physical use of the environment in Iceland and Greenland.

Theoretical Foundations

STEM in a Global Context

Participation and interest in STEM-related international education programs are growing. Globalization, according to Bremer (2007), has been the drive behind internationalization in the engineering education field. “Those universities and companies that recognized the need began advocating for international education 20 years ago,” Grandin observes (Bremer, 2007, p. 33). Bremer (2007) states as early as the 1990s, companies started noticing the importance of engineering students to have international experience, and began pressing universities for accessibility to international programs.

Leggett (2011) reports in 2008 engineering majors made up only 3.2% of all U.S. students studying abroad, and just 1.6% of U.S. study abroad students were majoring in math or computer science. These percentages held true for 2009 too, while health science and life sciences combined accounted for almost 12% of STEM majors (Anderson, 2009). Combined, STEM majors were 17% in 2009, the highest in history, and that trend has only grown in the past five years. STEM majors, with the rise of short-term study abroad opportunities, scholarships, joint-degree programs, and collaborative research opportunities now make up 23% of all U.S. study abroad students, according to data from Open Doors (2014). "For the first time, American students studying abroad who are pursuing STEM fields outnumber those in every other field of study, accounting for 22.5% of U.S. students overseas" (Bidwell, 2014, p. 4). Scholarships include funding from the U.S. Department of State, the RISE, the Boren Fellowship, the Benjamin A. Gilman International Scholarship program, the Whitaker International Fellows program in biomedical engineering, the Winston Churchill Foundation Scholarships, and the Fulbright, among countless others that can be used towards an international education experience for STEM majors.

The biggest proponent of international exchange programs in the STEM fields is ABET (Accreditation Board for Engineering and Technology). ABET is an accrediting agency for tertiary education programs that helps with curriculum mapping for exchange programs in applied science, computing, engineering, and technology. According to the Executive Director of ABET, Michael Milligan, "We are 100 percent behind international engagement. We accredit 180 programs in 20 countries" (Leggett, 2011, p. 45). Dispelling the myth that STEM students cannot get credit for their overseas courses

or will need an extra year to graduate, ABET accredits curriculum overseas for STEM students to bring credit back in their major to their home institution. This has been a main contributing factor to the larger number of STEM students studying abroad (Leggett, 2011).

Despite of the rise in accessibility and number of programs available to STEM students, there is some concern in the field of international education that STEM students seeking an international experience will soon outnumber the programs offered (Anderson 2009). Part of the reason for the increase in STEM students may be due to the number of international students coming to the US to enroll in STEM programs. From 2008-2013 there was a 27% increase in international students enrolled in STEM majors. According to the Institute of International Education Open Doors report (2015a), 44% of all international students in the U.S. were enrolled in STEM fields—almost 400,000 students. Furthermore, a study by Pew Research Center found that international students earned 27% of undergraduate STEM diplomas, but almost 60% of graduate STEM diplomas (Desilver, 2015). Only in 2016 will Open Doors begin collecting and reporting on statistical data for international students participating in international programs (Institute of International Education, 2016). “This change is being made after careful consideration and with discussion and feedback from the broad international education community” (Institute of International Education, 2016, p. 1). Considering these students already have or know the value of international experience in the competitive global job market, it is reasonable to say that part of the push to internationalize STEM programs is a result of growing numbers of international students participating in these programs. Internationalizing the STEM curriculum keeps U.S. tertiary programs competitive in the

global marketplace. Furthermore, encouraging U.S. students to seek international experience will make them more competitive in the global market.

STEM Attrition

Despite the high enrollment numbers among international students and the rise in STEM students studying abroad, attrition rates in STEM fields are still extremely high. "A total of 48% of bachelor's degree students and 69% of associate's degree students who entered STEM fields between 2003 and 2009 had left these fields by spring 2009" (Chen & U.S. Department of Education, 2013, p. 14). About half of the students leaving switch majors to a non-STEM field, while the remaining half exited before obtaining a degree (Chen & U.S. Department of Education, 2013). According to Chen at the National Center for Education Statistics (2013), attrition rates were correlated to a variety of factors including demographics and precollege academic preparation, among others. Women, minorities, first-generation students, and students from lower socio-economic backgrounds were reported to have higher STEM attrition rates than their counterparts (Chen & U.S. Department of Education, 2013). A study done by the National Math and Science Initiative (2014) found that only "44% of 2013 U.S. high school graduates are ready for college-level math; 36% of 2013 U.S. high school students are ready for college-level science" (p. 1).

One way to address attrition rates and prepare students is by showing students different vocations and field options they can see as a career. The U.S. Department of Education has been trying to get high school students interested in STEM fields earlier through funding and policy initiatives that prioritize STEM, such as Race to the Top. The Experiment program to Iceland and Greenland demonstrates to students how to use and

visualize science, technology, engineering, and math in authentic, tangible ways that meet their learning needs. Analyzing the typical Experiment participant, it is important to consider the students' development characteristics and consider the specific needs of teenagers overall. Teenagers are often thought to be energetic, adventurous, and less emotionally stable. Therefore, it is important to create an atmosphere and learning environment that includes boundaries and structure, interactive and physical activities, opportunities for guided risk, and individual expression.

Participant Learning & Development Needs

According to Erikson's stages of psychosocial development, adolescence lasts from approximately ages 12-18 (Engler, 2009). Erikson also largely emphasizes the difference between identity and role confusion during adolescence. The stress of role confusion at this stage in development is present in both professional choices adolescents must make, as well as where they find meaning in their culture (Engler, 2009). Peer relationships are valued higher during this phase and vital to development, as teenagers will be trying out roles and often need support from various groups. On this program, because participants will be outside of their culture, group dynamics are incredibly important during this time. Students may be more vulnerable because they will be away from their familial unit and typical surroundings. This is when the function of the group leaders is so pivotal in guiding students through the experiential learning cycle and fostering relationship-building, critical reflection, and cross-cultural communication. Group leaders will use the four-part structure of The Experiment to build these skills and facilitate discussions for the group during orientation, homestay, thematic activities, and reflection at the close of the program.

In Baxter Magolda's Theory of Self-Authorship, there are four stages to undergo in order to reach self-authorship (Baxter Magolda & King, 2011). Based on their age, our participants would be considered at the 'External Formulas' phase, where they largely rely on others to guide and define them (Baxter Magolda & King, 2011). It is possible that many of the Experiment participants will experience the 'Crossroads' phase during their Experiment program. New life experiences can often trigger 'crossroads' because they encourage people to question others' ideas and their own behavior. Part of the effects of the 'crossroads' stage is an increasing self-awareness and acknowledgement of trust for one's internal voice (Baxter Magolda & King, 2011). It is important that both in-country partners and group leaders encourage students during this time so they are able to grow and feel supported as they work through stages of Self-Authorship. Baxter Magolda looks at Self-Authorship from the perspective of constructive development, whereby students use their experience and identity as a foundation for creating their own learning (Baxter Magolda & King, 2011).

In Baxter Magolda's Creating Contexts for Learning and Self-Authorship (1999), the author connects identity with social and cognitive dimensions in a meaningful way for the learner. These dimensions are constructed according to the individual, and Baxter Magolda argues that only when pedagogy engages the learner from the viewpoint that the learner needs, will the learner experience that challenge to their epistemic assumptions (1999). Offering a program that engages students in the learning process and expands participant awareness of critical global issues while building on their epistemological dimension is critical to the success of this program. Giving students the tools, knowledge,

and a career focus to address these critical issues will ensure college readiness and benefit all stakeholders.

Needs Assessment

In July 2015, I had the opportunity to co-lead the China: Ethnic Minorities and Contemporary Cultures program or "China South" as it was nicknamed. During group leader training week, I noticed some differences in the expectations and responsibility of group leaders in creating and implementing activities to meet objectives. Part of this I attribute to the involvement of the in-country partners, but also to the variety of themes within programs. Some themes need more supplemental activities and curriculum support. Based on competitive market analysis, including discussions with the program development and marketing team, the Director of Programs and I determined that STEM programs aimed at high school students represented an interest that has been unmet.

According to staff, current pre-approved program locations are India, Iceland, or Greenland. After conducting a needs assessment for new programs, examining the STEM trends in the international education field, and interviewing staff on gaps and issues in programming and curriculum, Iceland was agreed to be the most practical location for a new program. There are multiple stakeholders with both interest and influence in the development of a new STEM program in Iceland. Students and The Experiment are the major direct beneficiaries on a micro level, and they along with their parents and sponsoring organizing or schools have a significant interest in making sure the program is educational and successful.

Program Evaluations & Gaps in Programs

Experiment leaders, in-country partners, and World Learning staff and directors have a formal stake in the success of this program as well to ensure the well-being of the participants and the continuation of the program. Group leaders and staff evaluate programs annually and often times they are terminated if they cannot meet the needs of The Experiment. More frequently, it comes down to partner relations. "If the partner is not under the capacity—budgeting, safety precautions, emergency response plan," then the programs will be reviewed, and often cut, as in the case of Botswana (R. Buck, Personal communication, December 13, 2015). "It wasn't unsafe per se, they just couldn't give us the information we needed" (R. Buck, Personal communication, December 13, 2015). Other previously offered programs include: Turkey, Australia, New Zealand, Switzerland, Ghana, Chile, Norway, Brazil, and the Navajo Nation, to name a few. Initially, leaders review programs in-depth, students evaluate their experience in surveys, and then staff read the reports and review programs. Ultimately, programs end for a variety of reasons but often start up again, like Brazil. With Brazil hosting the Summer Olympics in 2016, it is just not feasible to run programs there. The Experiment will return the following year.

By surveying staff and returned Experimenters, and interviewing staff about the gaps in programming, there is a general consensus that the Experiment should open at least one new program (see Appendix A). Though many people may be unaware of the process of designing an Experiment program, often The Experiment uses original SIT Study Abroad program contacts and design, and formats these to fit the exact needs of

The Experiment (C. Thomas, Personal communication, November 19, 2015). It has to align with The Experiment structure and objectives nonetheless.

Another reason that The Experiment creates certain programs is if they have strong staff and a strong program already in the country. "Arts and Social Change programs cater to a certain demographic. We can offer them in countries that we offer other programs already" (R. Buck, Personal communication, December 13, 2015). Having a strong staff and a robust program already in a particular location gives The Experiment more liberty to be creative in adding additional programs to that country. While it is easier to add programs to countries where they have more resources, it is important to consider multiple destinations and themes in order to remain competitive. The Experiment will utilize some staff and resources in Iceland under associate the World Learning program, SIT Study Abroad. After reviewing the programs in each thematic focus, interviewing staff, and surveying staff and students, there is an identified need for:

1. A program with a STEM focus;
2. A program with a community service component and multi-country excursion;
3. A program with an academic science-based research project (C. Thomas, Personal communication, November 19, 2015).

Because there is already an existing Experiment program in India, Experiment program staff are seeking a new program proposal for Iceland. After speaking with Christina Thomas, Director of Operations, about The Experiment program's goals and curriculum, we decided the focus would be sustainability and renewable energy, with a

science-based project and a service component. Because of the logistics of running a program to Greenland independently, we concluded it would be more feasible to do an excursion to Greenland from a base location in Iceland. The goals of all thematic foci for Experiment programs are investigation, leadership skills, global issue awareness, and learning through experiential contact (The Experiment in International Living, 2015b). This global issue awareness would be a sustainable energy/climate change focus, categorized under Sustainability and the Environment. Much of the experiential learning and leadership skill development will be integrated into curriculum design, activities, and objectives of the program.

Survey Methods

The goal of the survey was to seek feedback about possible themes and locations from all people involved in The Experiment programs. Alumni, former leaders, and staff are all involved in generating interest in these programs and therefore are critical to the process of designing them. After distributing an anonymous questionnaire, I received 10 completed surveys. Former students and staff from The Experiment completed questionnaires about where they thought students would be interesting in going in 2017 (see Appendix B). The options for destinations chosen for the survey were picked because of their program feasibility with SIT Study Abroad connections and plausible student interest. Themes are another consideration when writing the program, so questions concerning topic themes were open for recommendations as well. Respondents were given three choices: very interested, maybe some interest, and little interest. Of the 10 responses, Iceland was rated highest by percent for ‘very interested’. Unaware of the history of terminated programs before creating this survey, respondents ranked Brazil and

Australia second by percentage for 'very interested'. Australia had programs as recently 2011 and was terminated, and Brazil will run again in 2017.

For theme suggestions for these country options, respondents had the option to recommend a topic they thought would be successful. "Climate change and effects on the environment in places like Iceland/Greenland" and "Iceland and Greenland environmental/scientific research" were the two suggestions for thematic topics in Iceland. An Iceland program with an excursion to Greenland fulfills several needs of The Experiment programs team and identified stakeholders. For the identified gaps in programs, Iceland is an easy location to run a physical science-focused sustainability program because of its use of geothermal and hydroelectric power, location in the Arctic and atop the Mid-Atlantic Ridge, and unique topography and geology.

Goals & Objectives

The Experiment in International Living Goals & Objectives

The Experiment has general goals for the organization, common program goals, as well as goals for each of the four structures that make up the program: the orientation, homestay, thematic focus, and reflection. The Experiment's program goals are to:

1. Enable high school students to connect and engage another culture and society;
2. Explore the host country through hands-on experiences in local communities and living with host families;
3. Develop teamwork, intercultural communications, and leadership and language skills while on the program; and

4. Foster understanding and build relationships across ethnic, religious, and national groups within the Experiment groups and with their host country (The Experiment in International Living, 2015, p. 83).

In all Experiment orientations, the learning goals are team building, leadership, introduction to the thematic content, and introduction to the history, food, culture, and arts of their host country (The Experiment in International Living, 2015). These introductions contribute directly to the third and forth program goals by creating the opportunity for fostering team dynamics, giving students information about the culture, and providing them with opportunities for leadership. Group leaders are trained to use icebreakers and team building activities to build up the group dynamic, while Experiment participants are strongly warned against forming exclusive relationships and how they can hurt the group dynamic and team culture. Orientation welcome packets consist of introductory readings on the theme topics and the host country culture, which are intended to spark discussion of the host culture and theme.

The goals of the homestay are language learning, cultural immersion, intercultural-communication, leadership skills, and exploration of the community (The Experiment in International Living, 2015b). The homestay has been the flagship immersion element of The Experiment. It is what students often report to leaders they are most nervous about at the beginning of the program and their most meaningful experience at the end. The homestay aligns with and contributes to all four of the program goals. It is designed to connect students to the culture, enhance language skills, help them practice independence, and make friends in the community (The Experiment in International Living, 2015b).

Goals of the reflection include personal growth, re-entry preparation, group adjourning and celebration, and next steps (The Experiment in International Living, 2015b). Though none of these goals relate directly to program goals, they focus on shared learning and discussion of the overall program goals. The reflection part of the Experiment model is seen as a foundation in John Dewey's Experiential Education (Dewey, 1948) as well as Kolb's synthesis of Dewey's writings in his own Experiential Learning cycle (as cited in Miettinen, 2000). Leaders are encouraged to practice reflection activities throughout The Experiment, but especially at the end. Experiment groups generally hold a mid-point reflection and a re-entry and reflection workshop, as well as a reflection any time the group has a noticeable issue or behavior problem. The reflection for this program will focus both on individual and group growth as well as learning outcomes.

The overarching goals of the thematic focus are investigation, leadership skills, global issue awareness, and learning through experiential contact (The Experiment in International Living, 2015b). While each of the goals of the thematic focus matches some part of each program goal, the second goal is the only one that mentions 'hands-on experiences', or 'experiential learning'. Theme-specific workshops, discussions, trainings, and activities are provided throughout the program. The themes of the programs were designed to give students a chance "to experience immersion in a deeply enriching aspect of the host country" (World Learning, 2015b). With some programs, the program goals are directly related to the thematic foci—language and cultural discovery. However, in programs with different thematic foci, it is arguable that the cross-cultural

competence students receive from the homestay acts as a value-added benefit of the structural design and not as a main goal.

The Energy, Sustainability, and the Environment in Iceland program will be categorized under the theme "Sustainability and the Environment". The curriculum goals and objectives are based on backward design (see Appendix C) to both identify the desired outcomes of student learning as well as plan experiences and activities to meet these objectives. For this program, the goals of the Energy, Sustainability, and the Environment in Iceland program act as specific supplemental goals for the theme "Sustainability and the Environment".

Energy, Sustainability, and the Environment Program Goals & Objectives

Along with existing Experiment program goals, goals for the four structures, and goals of the organization, the thematic focus goals for this specific curriculum for both participants and program are as follows:

Participant Goals and Objectives

Goal 1: Participants will develop knowledge of Iceland's energy sources, systems, processes, uses, and environmental impacts

Objectives:

- Participants will learn basic geology terminology
- Participants will understand how the energy is converted to electricity and heat
- Participants will learn about environmental impacts of Iceland's energy resources

Goal 2: Participants will have an increased knowledge of Iceland and Greenland, their energy and environment, and relationship to the critical global issue of climate change

Objectives:

- Participants will expand their knowledge of Icelandic and Greenlandic geography and where energy is sourced
- Participants will develop unique first-hand knowledge of climate change and its affects on the arctic landscape and environment
- Participants will give a short presentation of their learning during the reflection

Goal 3: Participants will understand the current and historical relationship between the environment and the host populations, culture, politics, and economics in Iceland and Greenland

Objectives:

- Participants will increase their knowledge of the laws, traditions, and economies in Iceland and Greenland
- Participants will learn about the current environmental trends in Iceland and Greenland
- Participants will gain an understanding of the history of Iceland and Greenland and their land use

Program Goals and Objectives

Goal 4: To implement a program in Iceland and Greenland that addresses the need for more hard science and STEM-focused theme and fills program gaps

Objectives:

- The Energy, Sustainability, and the Environment in Iceland program will meet a program need for more STEM-focused themes, focusing on renewable energy and climate change

- The excursion to Greenland expands student knowledge through academic comparison of geographic locations, effects of climate change, and sustainability issues

Goal 5: To expand program location offerings by developing new connections

- Build on existing SIT Study Abroad resources to include short-term providers
- Expand resources in Greenland to offer excursions

Program Description

Energy, Sustainability, and the Environment in Iceland is a program proposed for The Experiment in International Living's summer 2018 portfolio. This Experiment program is in collaboration with Extreme Iceland, the University of the Westfjords, and Disko Line in Greenland. Energy, Sustainability, and the Environment in Iceland is four-week outbound program for 15 U.S. high school students to Iceland with an added excursion to Greenland. It intends to promote interest in STEM fields, physical science, and sustainability. Lecturers will vary from climate change specialists, conservation and wilderness management specialists, to volcanologists and energy experts. The excursion to Greenland would be a closer look into climatology, wildlife, and land use management. Considerations for service projects will be environmental-focused, such as trail maintenance, park cleanups, or basic wildlife research assistance. Opportunities for projects will vary by student interest, and depend on the itinerary and lecture series.

Participants meet at a U.S. airport and travel together with group leaders to Iceland. Orientation is in Reykjavik and Experiment participants will stay in Reykjavik during the night and travel to lectures, activities, and sites, during the day for the first third of the program. The homestay and community service project will take place in

Isafjordur in collaboration with the University of the Westfjords. The weeklong excursion to Greenland will incorporate a whale watching and glacier tour. Upon return from Greenland, students will close the program through presentations and reflection in Reykjavik before returning to the US. Staff will confirm details of the program and contracts at the end of 2016. The Experiment will add Iceland to the catalog in early 2017 and recruiting and marketing for the program would begin in fall of 2017. The pilot program will run in the summer of 2018. For a complete timeline, see Appendix D. Ideal participants would be interested in the outdoors, renewable energy, climate change, the environment, and in STEM fields.

Curriculum

The arrangement of the Energy, Sustainability, and the Environment in Iceland program will follow the existing model of The Experiment programs using the four-part structure. Each part below will outline the suggested activities for the in-country partners as well as the group leaders.

Orientation

The two group leaders will have gone through The Experiment Leader Training Week (LTW) in Brattleboro, Vermont immediately before the program start. The group leaders will receive a copy of the itinerary (see Appendix E) and the calendar (see Appendix F), and have time to plan the basic logistics, additional team building exercises, and supplemental activities related to the theme prior to meeting the students. The group leaders will be at the airport to meet students at the approved location and time, scheduled for 2018 to be in Boston. Orientation will informally begin at the airport while waiting for the flight. Group leaders will meet parents and participants and collect all

Experiment participants at their designated arrival times. Experimenters will become acquainted to their group, and leaders will begin warm-up and team building activities when all students have arrived. Group leaders and Experiment participants will fly together from Boston to Reykjavik. The welcome pack should be designed to include reading material about Icelandic and Greenlandic culture as well as the thematic focus. A formal orientation will take place in Reykjavik, the capital city of Iceland.

During the formal orientation in Reykjavik, students will meet the in-country partners and have a group welcome meal at Laekjarbrekka Restaurant (traditional Icelandic cuisine). Group leaders and in-country partners will go over rules, safety guidelines, and cultural customs during the formal orientation and Experimenters will create their own 'constitution' to follow for the group. In-country partners will meet with group leaders the first day to go over any questions about the itinerary and provide SIM cards for phones. The group leaders will arrange some supplemental orientation activities. Activities for the three days will include a city tour, visits to the National Museum and the Volcano Show. There will also be time to explore downtown Reykjavik (the main commercial shopping district), and an excursion to Thingvellir National Park to see Althingi, Gullfoss, and Geysir (the Golden Circle Tour). In-country partners at Extreme Iceland are responsible for transportation to and from airport to the hostel in Reykjavik. On day four, students will stay in Reykjavik, but more environmental-focused lectures, presentations, and trips will begin.

Thematic Focus

Throughout the program, participants will be engaged in activities central to the theme and goals of the program. Considering the theoretical framework and learning

needs of our students, as well as keeping with the structure of The Experiment, the curriculum is designed to engage participant interest in renewable energy, sustainability, and the environment in Iceland and Greenland. Group leaders and students will participate in experiential activities that contribute to the growth of knowledge in the theme. Beginning in Orientation, group leaders will be tasked with providing thoughtful and relevant articles on Iceland and Greenland and their energy sources, systems, processes, uses, and environmental impacts to stimulate discussion on the theme.

Day two in Iceland includes the Golden Circle tour. Experimenters will be introduced to the national landmarks in and around Thingvellir National Park. The third day, students will go to the Volcano House and see the documentary about Iceland's most historic eruptions. Participants will also have a chance to visit the National Museum, which explains a lot about the archaeology and history of the settlement and Iceland's original land use. On day four, participants stop at the Fridheimar Greenhouses to become familiar with the local agricultural process. Students will also visit the Quake 2008 Exhibition, where they will try out the earthquake simulator that replicates the power of the earthquake in South Iceland in 2008. There are visits to three hydropower plants: Irafoss Power Station, Ljosafoss Power Station, and Burfell—the second largest hydropower plant in Iceland. The final stop of day four is at the Solheimar Eco Village, a renowned sustainable-living community outside of Reykjavik.

The following days will involve a hike to Glymur Waterfall and a trip to Leidarendi Cave to go lava tube caving. Experimenters will go to Reykjanes Peninsula to see the historic livelihood for most Icelanders—fishing. Participants will visit the fishing plant to see the processing line in action. The week will end with a tour of the

Snæfellsnes Peninsula, which includes a short hike before going on a caving tour, a visit to the black-pebbled beach and a lava field. The last stop of the day is at the Natural Heritage Site of Gerduberg to visit the basalt columns. The next day, Experimenters head to the south coast to visit Eyjafjallajokull, the volcano that stopped air traffic after its eruption in 2010. The following day, students will leave for Isafjordur.

Homestay

The host communities in Iceland and Greenland are both indirectly and directly affected by tourism and their interaction with group leaders and American high school students, especially in the homestays and throughout the service portion of the program. During the homestay in Isafjordur, students will work with staff at the University Centre of the Westfjords, which specializes in Coastal and Marine Management, to complete a community service project. This is designed to change annually to engage student with the University Centre of the Westfjords and the local community. This university and location was chosen because of SIT Study Abroad's existing relationship with the University Centre of the Westfjords, already vetted homestays, and possibility to build a connection with Menntaskólinn á Ísafirði, the only high school in the Westfjords. Students will spend six days working with the University Centre and the community to complete a service project related to the thematic focus, and depending on the needs of the community. During the third week, the students will fly to Ilulissat, Greenland for a whale watching and iceberg tour of Disko Bay, where they will be able to speak with locals and guides about climate change and its affect on nature and tourism. The remainder of the program will focus on reflection and presentations of what students learned from the theme.

Reflection

Reflection will take place in Reykjavik after returning from the excursion to Greenland. Experimenters will participate in a group debrief when they return to Reykjavik, where they will have final instructions and a reminder for the presentations. Theme-based projects are structured so that students have an outlet for reflection and knowledge sharing before they return home, as well as to give them an audience to present to about what they learned on this program. This acts as a way to organize knowledge and practice speaking about their experience, which can be useful for students in the future.

Participants will be made aware of the presentation requirement at the beginning of the program, so that they may take advantage of the time to prepare. They will be allowed to present in groups or individually and to use any medium they feel comfortable with in order to present. Examples of this can be as simple as blogging or journaling, photography, mixed media presentations, storytelling, or any form of artistic expression. While there is no option for credit on Experiment programs, students will receive a certificate of presentation in a conference on energy, sustainability, and the environment after they present (see Appendix G). There will be ample free time the three days before the conference to prepare. Reflection presentations will take place in the morning of the second to last full day of the program.

Staffing Plan

The Experiment in International Living staff works mostly out of the office currently located in Brattleboro, Vermont. The executive director oversees both programs and admissions teams. The director of admissions and the director of operations report

directly to the executive director. Under the director of admissions is the admissions and recruiting team, which has no real hierarchy. This five-person staff includes two east coast representatives and two mid-west to west coast representatives and the systems coordinator, who helps manage the application process and online submission system. The director of operations supervises the operations manager, who works with and oversees the group leader coordinator, logistics coordinator, program officers, and contract staff. The coordinator team has work-study students and part-time and/or seasonal help that work with them as well. A visual chart of The Experiment in International Living full-time staff (see Appendix H) has been created for reference.

The executive director and director of operations review program proposals. They will establish the program contracts and approve new program itineraries and logistics for the Energy, Sustainability, and the Environment program, as well as all pilot programs. The group leader coordinator will hire the group leaders for this program in 2018 and assist in Leader Training Week trainings. The logistics coordinator will purchase and finalize travel and flight arrangements, and the program officer will work with the in-country partners to finalize the program itinerary and details, which they will then share with the group leaders.

This program is set up in four parts, but the main point of contact while in Iceland will be through the Extreme Iceland office. Ester Audur Eliasdottir is the travel and tour consultant and will serve as the in-country contact on behalf of Extreme Iceland. Extreme Iceland is the in-country partner organization that will provide in-country support, travel, and lodging for the group. Extreme Iceland is a licensed education-based travel agency with guides that specialize in Icelandic geology and environment. After the first ten days,

the group will work with the University Centre of the Westfjords. This university has a long-standing relationship with SIT Study Abroad, another program of the World Learning organization that specializes in marine research and management. The trip to Greenland will be coordinated through Disko Line travel. Disko Line is one of the few passenger ferry lines in Greenland that offers guided tour packages. Upon return to Iceland, the in-country partner Extreme Iceland will continue to support the group.

Program Marketing

World Learning has a marketing team that manages the web content for its different programs. This team oversees the operation and maintenance of social media: Twitter, Facebook, LinkedIn, Instagram, YouTube, as well as the websites, online catalogs, and the blogs. Marketing for this program will be the responsibility of the marketing department at World Learning. The marketing plan will include a variety of online outreach, which involves social media, search engine marketing, and marketing automation. Search engine marketing will include both search engine optimization (SEO) and pay per click (PPC).

Once the program details are approved, the official brochure for the 2017 catalog will be created with tentative program details. This catalog is used online and in print form for the recruiting team and leader ambassadors that present at fairs and schools all around the US. After the program completion, participants from the pilot program may also be asked for their final projects (blogs, videos, photos) to be used in marketing and promotional materials in the future. Group leaders are given iPad minis for administrative tasks and social media management. For the first pilot of this program, they will also be

tasked with taking photos and maintaining a blog to be used for educational and marketing purposes.

A mock-up promotional feature for the catalog has been created (see Appendix I) for the World Learning marketing team to use as a template for the new Energy, Sustainability and the Environment program. The feature can also be printed as a one-page brochure and handed out individually to students interested in this program. The photo used for the spread (and other photos throughout the catalog and website) will display the natural scenery that students will have the opportunity to see on the program.

Recruitment & Admissions

As mentioned in the staffing plan, there are four admissions officers that are in charge of recruiting, applications, and conversion. These admissions officers have divided territories: New England, Ohio to Florida, and Chicago to Hawai'i, which is covered by two staff. Recruiting efforts consist primarily of presenting at fairs and schools. Presenting at schools can involve anything from informational sessions at lunchtime to all-school assemblies. There are informational sessions for parents, classroom presentations, meetings, and visits to sponsoring organizations. Sponsoring and mentor organizations The Experiment works with include The Posse Foundation, A Better Chance, The Fellowship Initiative, and World Affairs Councils of America, along with many private sponsoring donors from all over the US. Because of the alumni network of over 70,000 Experimenters, connections are the easiest way recruiters are able to make connections with schools and sponsors.

Occasionally, recruiting is done by program theme. During the spring 2016 recruitment cycle, admissions officers recruited for the Peace, Politics, and Human Rights

program at a model UN event and presented the Sustainability and the Environment themed programs at a sustainability festival in Portland, OR (R. Buck, Personal communication, March 20, 2016). For the Energy, Sustainability, and the Environment in Iceland program, recruitment will be the responsibility of the admissions team, but will focus on students who are predominantly interested in science or education programs with a STEM focus.

Admission is a fairly standardized process. Students need to complete the application, which includes submitting the essay and obtaining a reference. Generally, most Experiment programs "are open to all students who have completed their 9th, 10th, 11th, or 12th grade year but have not yet entered college or university" (World Learning, 2016d). Some programs have minimum language and age requirements as well. Students are eligible as long as they complete the application, meet the grade level requirement, are approved to travel by their doctor, and pay the fee. If students cannot pay the full fee, they can apply for scholarships and aid. In 2015, The Experiment awarded participants over 2.1 million dollars in financial assistance (The Experiment in International Living, 2015a). Participants also need to secure a valid passport and a visa if the country they travel to requires it.

Diversity Plan

The Experiment's mission includes "access and inclusion". They provide motivation for choosing their programs, which includes their commitment to providing scholarships to students from diverse backgrounds. Participant groups are small, no more than 15 students, and include "very different geographic, racial, ethnic, and socioeconomic backgrounds" (World Learning, 2016b). Many of the sponsorship and

mentoring organizations also solely commit to providing access to educational opportunities for students of color and/or students from lower socioeconomic backgrounds. They typically partner with The Experiment to provide informational support and funding. On the Diversity Abroad website, The Experiment's diversity statement reads "Experimenters are high school students of different races, religions, sexual orientations, physical abilities, and socioeconomic backgrounds" also highlighting their commitment to inclusion (Diversity Abroad, 2016).

Logistics

The in-country partners are in charge of most of the transportation, hotels, and meals in Iceland and Greenland, while The Experiment logistics coordinator arranges dates and times and books round-trip group international travel to Iceland and Greenland. Summer is the ideal time to travel to these destinations because of the weather and amount of sunlight. Moreover, there are comparatively cheaper flights from the New England area to Iceland, and Iceland is one of the few countries with direct flights to Greenland.

Group leaders are mainly to provide supplemental activities and facilitate group discussion and reflection, but they will also need to coordinate some local activities. This information will be shared with leaders at Leader Training Week when they review the itinerary with the program officer. After students are accepted, they are provided with webinars, pre-departure information, a packing list, domestic travel information, group flight details, health and medical tips, and more. Parents and participants will have access to the itinerary and hotel information.

Extreme Iceland staff will transfer the group from the Keflavik airport to their hostel, and provide all transportation needed for day trips outside of the capital for the first 11 days. Extreme Iceland will organize the stay in Reykjavik for the first 10 nights. Breakfast is included in the hostel every morning. Lunch and dinner is provided by Extreme Iceland, including the welcome meal at Laekjarbrekka Restaurant. All entry fees, transportation, tour guides, lecturers, and tickets are included. On the eleventh day, Extreme Iceland will provide the transportation to and from Isafjordur, which is approximately a six and a half hour bus ride.

As part of the World Learning organization, SIT Study Abroad's center at The University of the Westfjords will act as a provider for the homestays and community service project during the homestay week. Once in Isafjordur, students will stay with homestay families. The University of the Westfjords will arrange the ceremony where the students meet their homestay families and the homestay families will transport students back to their home. They will provide all breakfasts and dinners for the participants. During the day, the University of the Westfjords will arrange the community service activities and education guides. The Experiment will cover the cost of lunches for the participants for these six days. Extreme Iceland will arrange the stay in Reykjavik the night before the flight to Greenland and transport to the airport.

Pick up in Greenland will be arranged by Disko Line. Students will be transported to their hotel directly in Ilulissat, where they will spend the first night. The tour of Disko Bay includes all hotels, breakfasts, and boat transport. The budget for this program covers the costs of lunches and dinners during the excursion to Greenland. Transport back to the airport is included. The program budget includes the group flight to and from Greenland.

Upon return to Iceland, Extreme Iceland will provide airport transfer again, and arrange the remainder of the accommodations, the trip to the Blue Lagoon, and airport transfer for the final flight.

Health & Safety Plan

With low crime, few health problems, and large English-speaking populations, safety and security in Iceland and Greenland pose little risk with proper outdoor precautions. The health and safety of participants is of critical importance to both The Experiment in International Living and World Learning overall. Each program undergoes safety and risk management evaluations to help control unnecessary dangers. The framework for each program is designed to mitigate risk, and set up so that participants have support throughout the program. Health, safety, and security measures are individualized for each program due to the varying conditions of the two dozen countries in which The Experiment operates. All Experiment leaders and participants are covered under Aetna Travel Insurance (see Appendix J).

The health, safety, and risk management plan begins by operating in countries that meet the risk management standards, working with reputable in-country partners, and hiring experienced group leaders and providing them with resources and training to handle safety and safety issues. While the program locations of Iceland and Greenland do not pose any excessive probability of risk, the Energy, Sustainability, and the Environment in Iceland program will have the same general support structure as all Experiment programs, including:

- Pre-departure preparation
- Thorough pre-departure medical screening

- In-country partners
- Two group leaders
- Comprehensive in-country orientation
- Medical insurance
- Ongoing monitoring
- Homestay standards
- Twenty-four hour on-call support (World Learning, 2016e)

Experiment participants are required to submit their health information and history for review before departure. This is not used for admission requirements, but to certify participants and their guardians are aware of the program travel realities and are prepared for the program. This information may be provided to the appropriate parties such as group leaders and in-country partners for emergency response, such as allergies. This documentation will assist administration, faculty, and staff with the essential guidance during a health or safety concern and will not be used to discriminate or harm a participant. All information will be kept confidential and secure. For more information, please refer to the Experiment website (see Appendix K).

Crisis Management Plan

Crises on the Energy, Sustainability, and the Environment in Iceland program may include but are not limited to: natural disasters, political disturbances, missing group members, violent crimes, and/or loss of life. All students and their parents are encouraged to monitor and observe all travel advisories, including notices given by the Center for Disease Control (CDC), U.S. Department of State travel warnings, public announcements, and consular information sheets. One of the reasons Iceland was selected

as a new program destination was due to its relative economic and political stability. Unrest does occur, but Iceland has repeatedly demonstrated the peaceful and democratic ways in which its citizens tend to resolve national issues. Should an emergency occur during the program, it is the responsibility of the group leaders and in-country partner to respond. The Experiment call center is in place to manage and filter all incoming calls for emergencies. Experiment staff has been trained to handle incidents such as emergencies, medical issues, behavioral and logistical issues, and there is a licensed psychiatrist on the call team as well. The answering service provides callers with options and instructions to press "0" to leave messages for less urgent calls, and allows callers to be transferred immediately for emergencies.

The Experiment group leader handbook includes the Incident and Communication guidelines. Reporting timing varies according to the severity of the incident. Thresholds I and II are for "routine incidents", whether support is needed or not (The Experiment in International Living, 2015b, p. 14). They are to be reported within 24 hours. Threshold III is to be reported as soon as possible, and covers incidents that require management from headquarters staff. Thresholds IV and V are for crises, natural disasters, threats to life or limb and incidents that require either an urgent or national response (The Experiment in International Living, 2015b). Group leaders will be equipped with cell phones that have emergency and international calling capabilities. They can also use the iPad to communicate back to The Experiment headquarters if necessary.

The Experiment staff thoroughly investigates program locations prior to student arrival and closely monitors Embassy and U.S. Department of State travel warnings. In the event of a Threshold IV or V incident, such as a natural disaster or political

disturbance, group leaders are to follow the guidelines outlined in the leader handbooks. For natural disasters, leaders are to see to the safety of the group, report the information to the in-country partner and seek their advice and help. Then communicate information to the U.S. embassy and Experiment headquarters, discuss plans with group members, and have Experiment participants call home once the situation is stable. In the case of any political disturbances, Experimenters are to avoid any situations and locations that can be potentially dangerous. In the unlikely event, leaders should maintain contact with the U.S. embassy for instructions and evacuation procedures, as well as the Experiment headquarters at all times during signs or news of any political unrest in Iceland or Greenland. Listed below are the incident reporting timing and the list of on-call staff (see Appendix L).

Budget Narrative

The Energy, Sustainability, and the Environment in Iceland program budget was created to cover all of the program costs for participants, and also to cover a percent overhead for The Experiment home and overhead and staffing costs. This is an outbound program with ideally 15 participants and two group leaders. The price is set per participant and given in U.S. dollars. Anything outside of the student program budget will need to be covered by The Experiment separately, such as site visits, insurance for leaders and participants, leader pay, and any other leader travel expenses outside of the program.

Program Budget

Energy, Sustainability, and the Environment in Iceland Program Budget								
Expenditures	**Cost**	**Units**	**Quantity**	**Total**	**In-Kind Contributions**	**Total**	**Assumptions**	
Reykjavik Expenses							Participants	15
Rountrip Flight	$400	participant	17	$6,800		$6,800	Staffperson	2
Package Price	$2,846	participant	15	$42,690		$42,690	Nights	27
Subtotal						$49,490		
Isafjordur Expenses	**Cost**	**Units**	**Quantity**	**Total**				
Homestay stipend	$25	participant per week	119	$2,975		$2,975		
Additional meals	$15	participant	17	$255		$255		
Activities	$50	participant	5	$4,250		$4,250		
Lecturers	$50	lecturer	3	$150		$150		
Subtotal						$7,630		
Greenland Expenses	**Cost**	**Units**	**Quantity**	**Total**				
Roundtrip flight	$700	participant	17	$11,900		$11,900		
Excursion (transportation+lodging)	$1,064	participant	17	$18,088		$18,088		
Meals (lunch+dinner)	$20	participant per day	7	$2,380		$2,380		
Subtotal						$32,368		
Program Subtotal						**$89,488**		
Revenue	**Cost**	**Units**	**Quantity**	**Subtotal**		**Total**		
Participant Fees	$7,200	participant	15	$108,000		**$108,000**		
Surplus/Overhead						**$18,512**		
Percent of Budget						17.14%		

Budget Notes

The Energy, Sustainability, and the Environment in Iceland program while onsite will be financed solely by student fees. This includes group airfare to the program destination from Boston. The budget expenditures divided into: Reykjavik program expenses (orientation and reflection), the excursion to Greenland, and the homestay and community service project in Isafjordur.

I. Reykjavik Expenses

A. The round trip flight includes all participants in the group flight from Boston. One large suitcase is allowed for checked baggage. Students that exceed the luggage allowance will need to pay for their own additional baggage fees. This is assuming a flight through Wow Air.

B. Package price includes hostel accommodations for 12 nights (group leaders have single rooms and private bathrooms), buses, guides, entry tickets to museums, pools, airport transfers, extra guide for lava caves, sightseeing, and all meals. This price also accounts for 5% inflation, as the quote is two years prior to the program running. During the Reykjavik portion of the travel, Extreme Iceland built in the expenses for the group leaders.

II. Isafjordur Expenses

A. Homestay stipends are compensation for the family to provide meals for the participants and offset the cost of hosting for seven nights.

B. The University Centre of the Westfjords and group leaders will provide for lunches during the group meeting time.

C. Activities include any additional funds for the community service project and possible trips around Isafjordur.

D. Lecturers or guides needed from the University are given a small stipend for their contribution. Additional funds needed for University of the Westfjords will be negotiated by SIT Study Abroad and The Experiment.

III. Greenland Expenses

A. Flights are from Reykjavik city airport to Ilulissat. Flights average 500 to 1400 USD. Price is a best estimate for a group flight per person ticket booked in 2018.

B. Excursion includes bus transfer to accommodation, lodging, breakfasts, and boat transportation. The boat transportation has a guide that discusses the bay's environment and nature. Each city also has a recommended list of free activities as well as activities that could be included for an additional cost.

C. Breakfasts are included with accommodation prices. Funds are for lunches and dinners per person for 17 people for all meals for the days where meals are not included with the lodging.

IV. Revenues/Surplus

Revenue includes only participant fees. All program fees will need to be deducted from participant fees. Anything additional is considered a surplus to cover overhead costs, leader training week, salaries, insurance, and other additional expenses for the larger organization. To increase surplus, it is possible to decrease the length of the excursion to Greenland, cut out certain activities, or shorten the length of the overall program. The fees could also be increased or decreased to meet the needs of The Experiment if program fees change in 2018. The four-week program is set at $7,200 per

participant so that it remains competitive to other programs that operate in Iceland, but still is able to offer components that no other provider can offer, such as the trip to Greenland.

Evaluation Plan

The needs assessment confirms there is an existing gap in the current program portfolio. The program portfolio is evaluated annually, with new programs and locations considered, and existing programs reviewed for their health, safety, security, and logistical challenges, and overall success. Summative and formative assessment methods will both be used in the evaluation of the pilot program to Iceland and Greenland in order to improve future iterations of the program, and to gauge whether or not it will continue.

An informal diagnostic assessment will be done during program orientation. Students will be given articles about the environment, current news regarding climate change, and trends in renewable energy in Iceland and Greenland. They are tasked with reading these in the airport and on the plane. Group leaders will discuss these articles with the group during the orientation and identify interest, knowledge of the topics, and areas for growth through informal interviews and conversations.

Group leaders and in-country partners will use formative assessments throughout the program. Due to the educational nature of this program, it will be important to observe student participant and engagement with the topic and materials. As students are generally asked to contribute to the group blog, reflect, and prepare for their summative presentation, group leaders should make sure students are able to grasp the material throughout the program. This can be done through check-ins at the end of the day,

reviewing student contributions to the blog, question and answer during transportation to and from activities, and student feedback.

At the end of program, the student presentations of theme-based topics will determine whether the participant fulfilled the program goals and objectives successfully and whether the program successfully addressed the gap in Experiment programming. Additionally, formal summative assessments are given after the completion of all Experiment programs. For group leaders these include a group leader administrative survey, program report, and student evaluations. The administrative survey includes questions on logistics, training, tools, on-call system, and finances. The program report is a post-program written analysis of the in-country partner, co-leader, and all of the activities. Feedback is given for each activity and organized by the four-part structure. Student evaluations are subjective group leader analyses of the preparedness, growth, contributions, and overall experience of each student on the program. Students are requested to fill out a survey for their program evaluation, which includes all aspects of the program, including the in-country staff and group leaders. Parent and sponsorship organization feedback is also requested informally and carefully examined by Experiment staff. In-country partner feedback is given post-program about the group leaders and budget and logistics on a needed basis. These will all be included as part of the Energy, Sustainability, and the Environment in Iceland program evaluation plan as well.

Conclusion

"[Experiment] programs are designed to equip participants not only with essential cultural skills, college prep skills, and, in many cases, language skills, but also with a deeper awareness of and sensitivity to critical global issues shaping the diverse

communities and regions we visit" (Diversity Abroad, 2016). This program proposal for The Experiment is intended to fill a gap in their thematic foci and expand their program location offerings. Goals and objectives of this program challenge students academically while giving them an opportunity to expand their first-hand knowledge of climate change and renewable energy.

By increasing the number of and improving access to experiential learning programs with a STEM focus, The Experiment can encourage participants interested in STEM to explore different aspects of the field and prepare them for careers in STEM. The Experiment and sponsorship organizations not only provide financial support for students, but also use programs to support and engage students from a variety of backgrounds. Internationalizing STEM early makes students more prepared for college through exposure to new topics, ideas, and cultures. Historically, The Experiment has been a leader in high school exchange. Adding a program in Iceland with an excursion to Greenland is a practical way to diversify their program portfolio and meet the growing needs of stakeholders while inspiring future change agents to address the most critical global issue—climate change.

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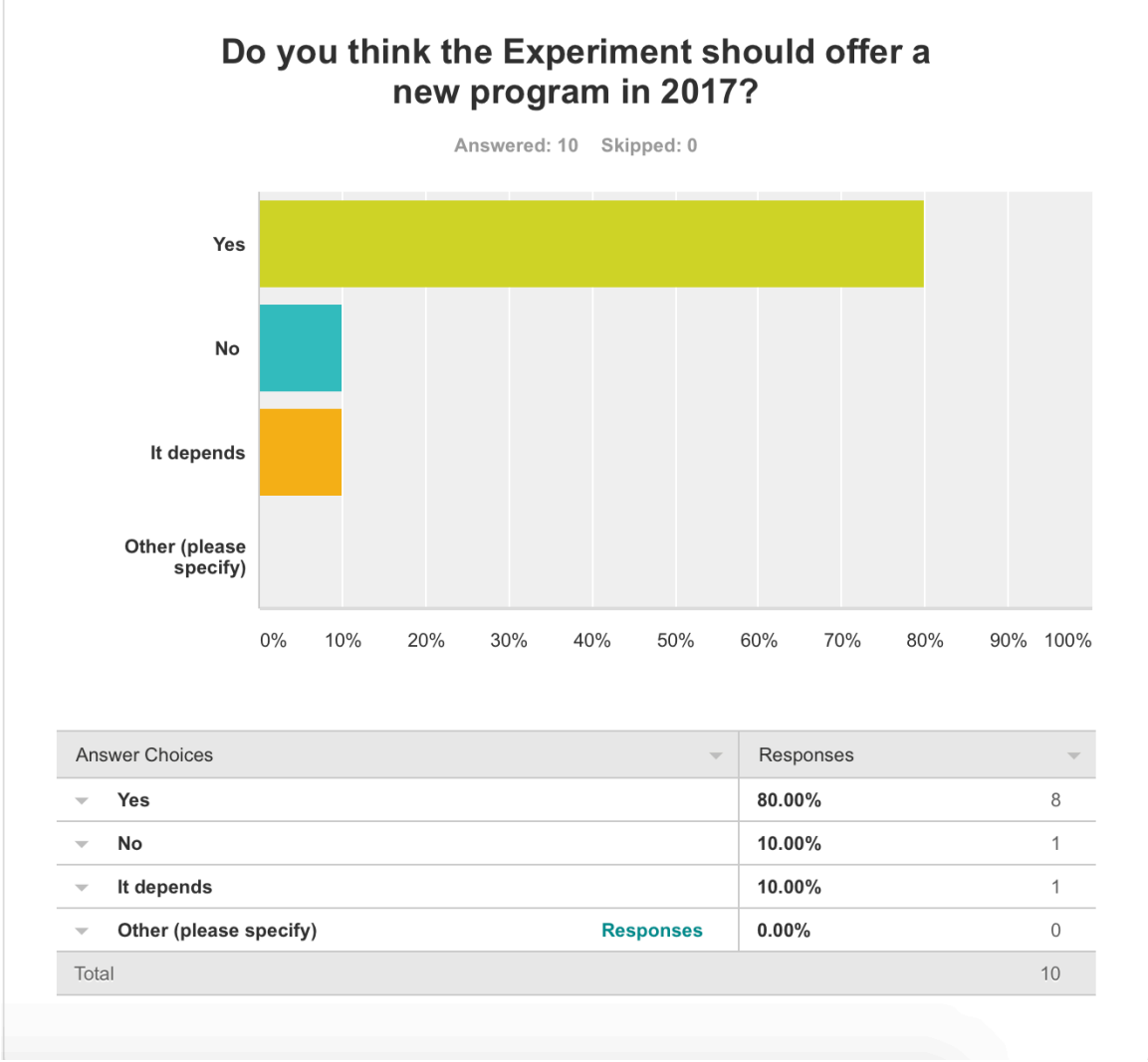
Appendix A

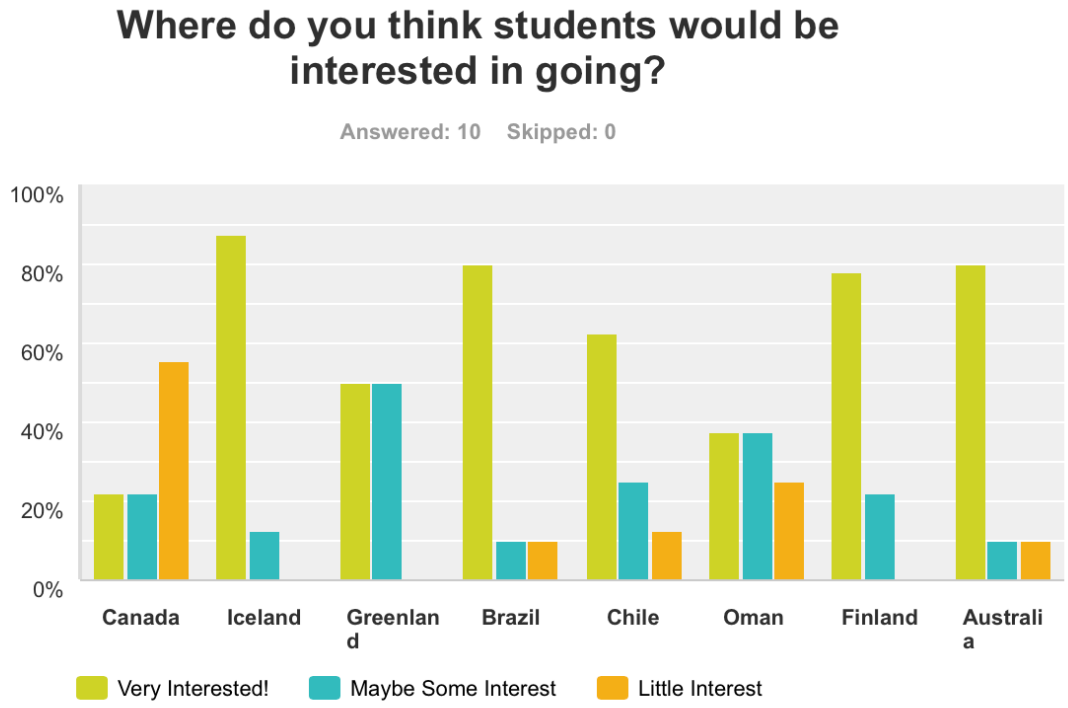
Survey Question: New Program



Answer Choices		Responses	
Yes		80.00%	8
No		10.00%	1
It depends		10.00%	1
Other (please specify)	Responses	0.00%	0
Total			10

Appendix B

Survey Question: Program Location



	Very Interested!	Maybe Some Interest	Little Interest	Total Respondents
Canada	22.22% 2	22.22% 2	55.56% 5	9
Iceland	87.50% 7	12.50% 1	0.00% 0	8
Greenland	50.00% 4	50.00% 4	0.00% 0	8
Brazil	80.00% 8	10.00% 1	10.00% 1	10
Chile	62.50% 5	25.00% 2	12.50% 1	8
Oman	37.50% 3	37.50% 3	25.00% 2	8
Finland	77.78% 7	22.22% 2	0.00% 0	9
Australia	80.00% 8	10.00% 1	10.00% 1	10

Appendix C

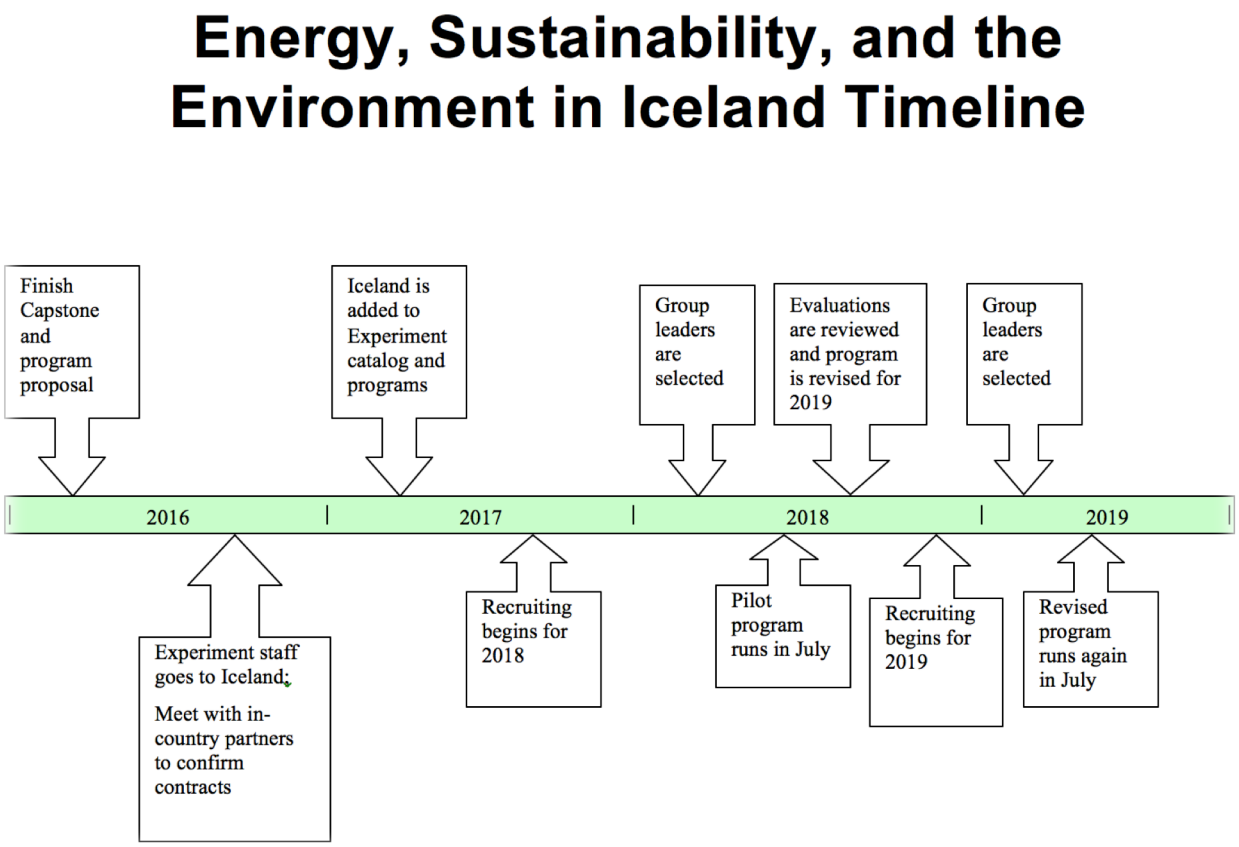
Backward Design Curriculum Plan

<table>
<tr><th colspan="2">Stage 1—Desired Results</th></tr>
<tr><td colspan="2">Established Participant Goals:
Goal 1: Participants will develop knowledge of Iceland's energy sources, systems, processes, uses, and environmental impacts
Goal 2: Participants will have an increased knowledge of Iceland and Greenland, their energy and environment, and relationship to the critical global issue of climate change
Goal 3: Participants will understand the current and historical relationship between the environment and the host populations, culture, politics, and economics in Iceland and Greenland

Established Program Goals:
Goal 4: To implement a program in Iceland and Greenland that addresses the need for more hard science and STEM-based theme and fills program gaps
Goal 5: To expand program location offerings by developing new connections</td></tr>
<tr><td>(Example) Understandings:
Students will understand . . .
-Iceland's energy is composed of 15% fossil fuel, 20% hydropower, and 65% geothermal
-Geothermal energy is sourced from geysers and hot springs in Iceland
-Iceland gets hydropower from the multitude of glacial rivers and waterfalls</td><td>Essential Questions:
-Why does Iceland have renewable energy?
-Where do Icelanders get their energy?
-How is the energy harnessed for use?
-What effects does the energy have on the economy?</td></tr>
<tr><td colspan="2">Students will know . . .
Students will be able to . . .
-Basic energy terminology
-Basic geological concepts
-Key facts that contribute to the success of Iceland's energy policies
- Recognize, define, and use energy vocabulary in context
- Use research skills (with guidance) to create a project relating to Iceland's energy and environment
- Express their findings through a presentation and in writing</td></tr>
</table>

<table>
<tr><th colspan="2">Stage 2—Assessment Evidence</th></tr>
<tr><td>Performance Tasks:
- Maintain a journal to answer questions of the day
- Work with pairs to discuss the answers to questions</td><td>Other Evidence:
-Use of energy and geology vocabulary in context
-Oral responses to lecturers' questions
-Blog posts reflecting deep understanding of learning goals for the day</td></tr>
<tr><th colspan="2">Stage 3—Learning Plan</th></tr>
<tr><td colspan="2">(Example) Learning Activities:
- Assess students knowledge during orientation
- Include readings on basic energy related topics relating to Iceland
- Visit the Burfell Hydro Power Station and Solheimar Eco Village; See Irafoss, Ljosafoss; Visit the Geopark and Earthquake Exhibition
- See the National Park including Thingvellir, Geysir, Gullfoss, and the deserted village Hesteyri in the Hornstrandir Nature Reserve; Go caving at Leiðarendi
- Visit to the Eyjafjallajökull Center, Friðheimar geothermal farm, Heillisheiði Power Station Exhibition, Carbon Recycling International, fish factory Xperience Fish, Power Plant Earth, Svartsengi Power Plant, Whale watching tour, Natural History Museum
- Work with University of the Westfjords to conduct an environmental community service project</td></tr>
</table>

Appendix D


Energy, Sustainability, and the Environment in Iceland Timeline
Finish Capstone and program proposal
Iceland is added to Experiment catalog and programs
Group leaders are selected
Evaluations are reviewed and program is revised for 2019
Group leaders are selected
2016
2017
2018
2019
Experiment staff goes to Iceland;
Meet with in-country partners to confirm contracts
Recruiting begins for 2018
Pilot program runs in July
Recruiting begins for 2019
Revised program runs again in July

Appendix E

Iceland 2018 Itinerary

In-country partners: Extreme Iceland, University of the Westfjords, Disko Line

*28-days/27-nights, tentative and subject to change

Host	Activities	Price/Notes
Day 1: Extreme Iceland	Arrival in Keflavik; Airport transport for 17 people; Check into hostel; Orientation; City Tour with Hallgrimskirkja; Welcome dinner (at Laekjarbrekka Restaurant) **Accommodations: Reykjavik City Hostel**	
Day 2: Extreme Iceland	Breakfast; Golden Circle Tour (Þingvellir, Gullfoss, and Geysir) **Accommodations: Reykjavik City Hostel**	9 AM pickup
Day 3: Extreme Iceland	Breakfast; National Museum; Volcano Show; Free afternoon **Accommodations: Reykjavik City Hostel**	City Bus included; Museum included
Day 4: Extreme Iceland	Breakfast; Burfell Hydro Power Station tour and Solheimar Eco Village; Irafoss, Ljosafoss visit; Geopark and Earthquake Exhibition, Lunch at Greenhouses **Accommodations: Reykjavik City Hostel**	9 AM pickup
Day 5: Extreme Iceland	Breakfast; Hiking trip: Glymur Waterfall **Accommodations: Reykjavik City Hostel**	9 AM pickup
Day 6: Extreme Iceland	Breakfast; Lava Tube Caving in Leiðarendi; Reykjanes Peninsula; Fish factory tour **Accommodations: Reykjavik City Hostel**	9 AM pickup
Day 7: Extreme Iceland	Snaefellsness Peninsula; Natural Heritage Site of Gerduberg **Accommodations: Reykjavik City Hostel**	
Day 8: Extreme Iceland	South Coast tour: glacier hiking, waterfalls, volcanoes, black sand beaches **Accommodations: Reykjavik City Hostel**	
Day 9: Extreme Iceland/UCW	Bus ride to Ísafjörður; Homestay in Ísafjörður **Accommodations: Homestay**	
Day 10: UCW	University Centre of the Westfjords tour **Accommodations: Homestay**	
Day 11: UCW	University Centre of the Westfjords; Volunteer project **Accommodations: Homestay**	
Day 12: UCW	University Centre of the Westfjords; Volunteer project **Accommodations: Homestay**	
Day 13: UCW	University Centre of the Westfjords; Volunteer project **Accommodations: Homestay**	
Day 14: UCW	University Centre of the Westfjords; Volunteer project **Accommodations: Homestay**	
Day 15: UCW	University Centre of the Westfjords; Volunteer project **Accommodations: Homestay**	
Day 16: Extreme Iceland/UCW	Bus from Ísafiörður to Reykjavik (8 hours) **Accommodations: Reykjavik City Hostel**	
Day 17: Extreme Iceland/DL	Transfer to Reykjavik airport for flight to Greenland Flight & Excursion to Greenland (7 days) Ilulissat **Accommodations: Hotel Icefjord**	
Day 18: Disko Line	7 Day Tour in Greenland: Qasigiannguit **Accommodations: Hotel Diskobay**	

Iceland 2018 Itinerary

Day 19: Disko Line	7 Day Tour in Greenland: Qasigiannguit **Accommodations: Hotel Diskobay**	
Day 20: Disko Line	7 Day Tour in Greenland: Aasiaat, Qeqertarsuaq **Accommodations: Panorama Hostel**	
Day 21: Disko Line	7 Day Tour in Greenland: Qeqertarsuaq **Accommodations: Panorama Hostel**	
Day 22: Disko Line	7 Day Tour in Greenland: Ilulissat **Accommodations: Hotel Icefjord**	
Day 23: Disko Line	Transport to Airport, Free Day: Flight back to Iceland; Bus to hostel **Accommodations: Reykjavik City Hostel**	
Day 24: Extreme Iceland	Reflection in Reykjavik: Natural History Museum; Trip to Vesturjarbæjarlaug **Accommodations: Reykjavik City Hostel**	Pool included; Museum included; Bus included
Day 25: Extreme Iceland	Group debrief; Free Afternoon **Accommodations: Reykjavik City Hostel**	
Day 26: Extreme Iceland	Presentations; (space in the hostel/classroom); Free afternoon **Accommodations: Reykjavik City Hostel**	
Day 27: Extreme Iceland	Blue Lagoon Trip; Farewell dinner **Accommodations: Reykjavik City Hostel**	
Day 28: Extreme Iceland	Kolaporid Flea Market; Bus to Keflavik; Flight back to US	Bus included

Appendix F

July 2018

Energy, Sustainability, and the Environment in Iceland

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
1 Group flight to Keflavik; Welcome dinner; City Tour; Orientation begins	2 Golden Circle Tour (8 Hours)	3 National Museum; Volcano Show	4 Greenhouse Visit; Earthquake Exhibition; Burfell Hydro Power Station; Solheimar Eco Village	5 Hiking trip to Glymur waterfall	6 Lava tube caving in Leiðarendi	7 Snæfellsness Peninsula; black sand beaches; lava fields; cave tour
8 South coast trip: glacier hiking, waterfalls, volcanoes	9 Bus ride to Ísafjörður Homestay in Isafjordur	10 University Centre of the Westfjords tour Homestay in Isafjordur	11 University Centre of the Westfjords; Volunteer project Homestay in Isafjordur	12 University Centre of the Westfjords; Volunteer project Homestay in Isafjordur	13 University Centre of the Westfjords; Volunteer project Homestay in Isafjordur	14 University Centre of the Westfjords; Volunteer project Homestay in Isafjordur
15 University Centre of the Westfjords; Volunteer project Homestay in Isafjordur	16 Bus ride back to Reykjavik	17 Flight & Excursion to Greenland (8 days)	18 7 Day Tour in Greenland: Qasigiannguit	19 7 Day Tour in Greenland: Qasigiannguit	20 7 Day Tour in Greenland: Aasiaat, Qeqertarsuaq	21 7 Day Tour in Greenland: Qeqertarsuaq
22 7 Day Tour in Greenland: Ilulissat	23 7 Day Tour in Greenland: Transport to Airport, Flight	24 Reflection in Reykjavik: Trip to Vesturjarbæjarlaug; Natural History Museum	25 Reflection in Reykjavik: Group Debrief; Free Afternoon	26 Reflection in Reykjavik: Free Morning; Presentations	27 Reflection in Reykjavik: Blue Lagoon trip	28 Kolaporid Flea Market; Flight back to US
29	30	31				

Appendix G

The Experiment in International Living presents this

Certificate of Presentation

To the following:

Treyvonne Richards

For his participation in the Energy, Environment, and Sustainability conference in Reykjavik, Iceland

July 26, 2018

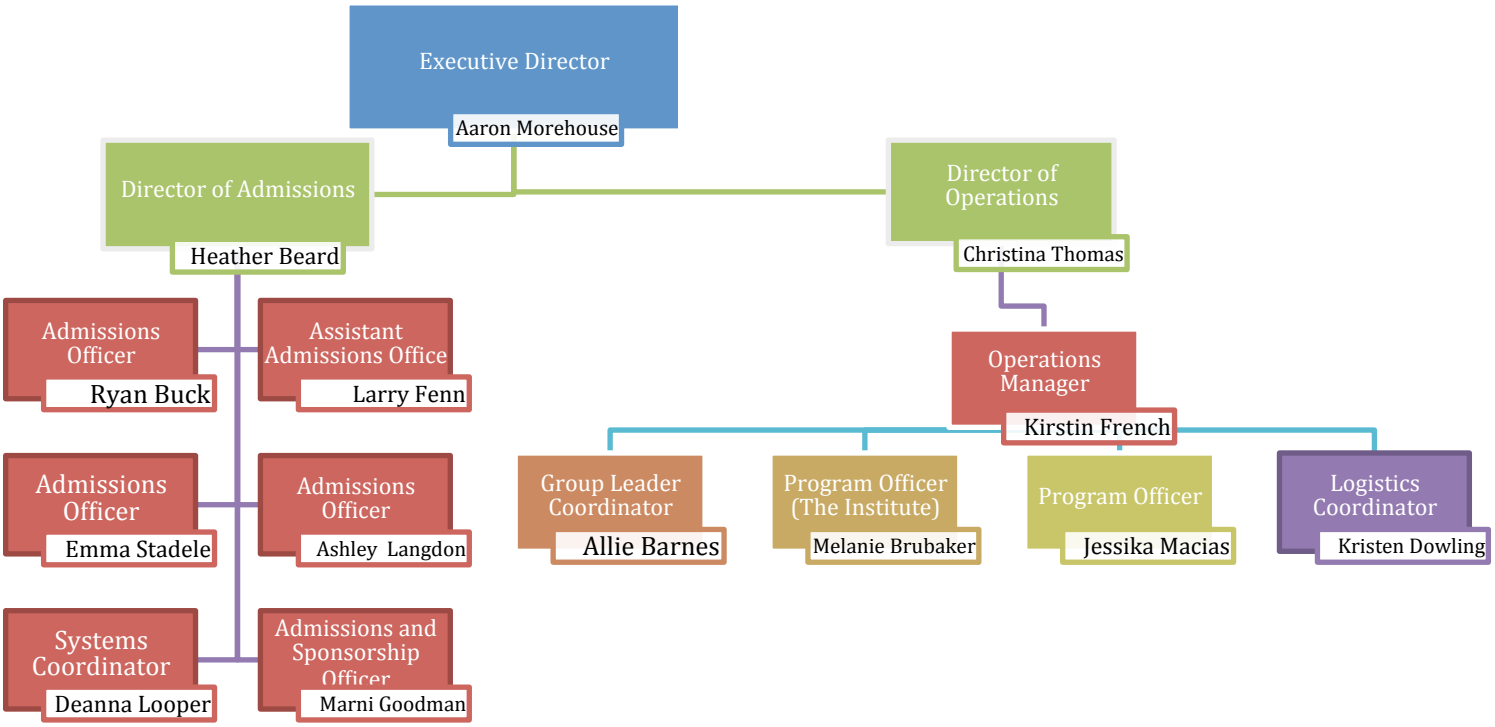
Katie Fassbinder, Group Leader

[Name, Title]

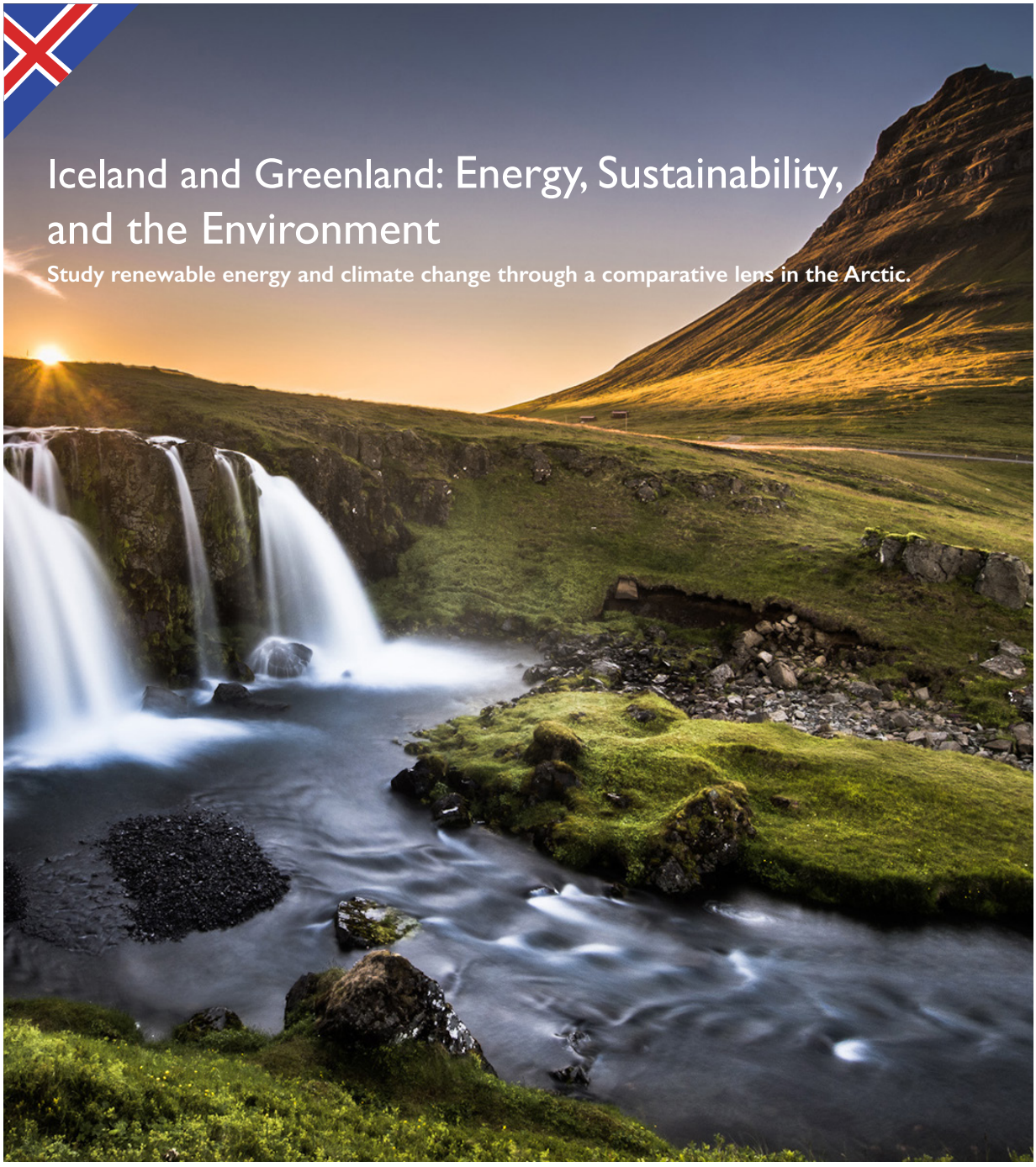
[Name, Title]

Appendix H

Staffing Chart



Appendix I


Iceland and Greenland: Energy, Sustainability, and the Environment
Study renewable energy and climate change through a comparative lens in the Arctic.

Explore the Arctic while learning first-hand about renewable energy systems and climate change through a comparative summer experience in Iceland and Greenland. Meet with experts in hydrology, geothermal, and wind energy while gaining in-depth knowledge about how Iceland sources and processes its renewable energies. Get the chance to hike on the Mid-Atlantic ridge that separates the North American and Eurasian plates and see awe-inspiring volcanoes, geysers, waterfalls, and lava fields up close. Spend time with your group lava tube caving, hiking, and swimming in geothermally heated pools and hot springs.

As the program moves north in Iceland to Isafjordur, you will get to know Icelandic culture while taking in almost 24 hours of sunlight a day living with a host family in the Westfjords. Share a traditional meal and learn some Icelandic as you get a glimpse of how Icelanders live and connect with their natural surroundings on the coastal peninsula. During this time you will also work with a nearby school to complete a community service project..

Your journey continues as you travel with your group to Greenland, one of the most untouched areas in the Arctic. Travel up and down the west coast of Greenland by ferry boat as you soak in views of massive icebergs and humpback whales around Disko Bay. Upon returning to Iceland, you will close out the program in the capital city with some final days of exploration and reflection.

To learn more about this program, visit **experiment.org/ICE.**

PROGRAM AT A GLANCE

Theme: Sustainability and the Environment

Components: City stay, rural stay, homestay, hiking/trekking, outdoor activities, rugged travel, community service

Orientation: Reykjavik, 3 days

Homestay: Isafjordur, 7 days

Other Accommodations: Hostels, guest houses, hotels

Duration and Dates: 4 weeks, July 1st - July 28th

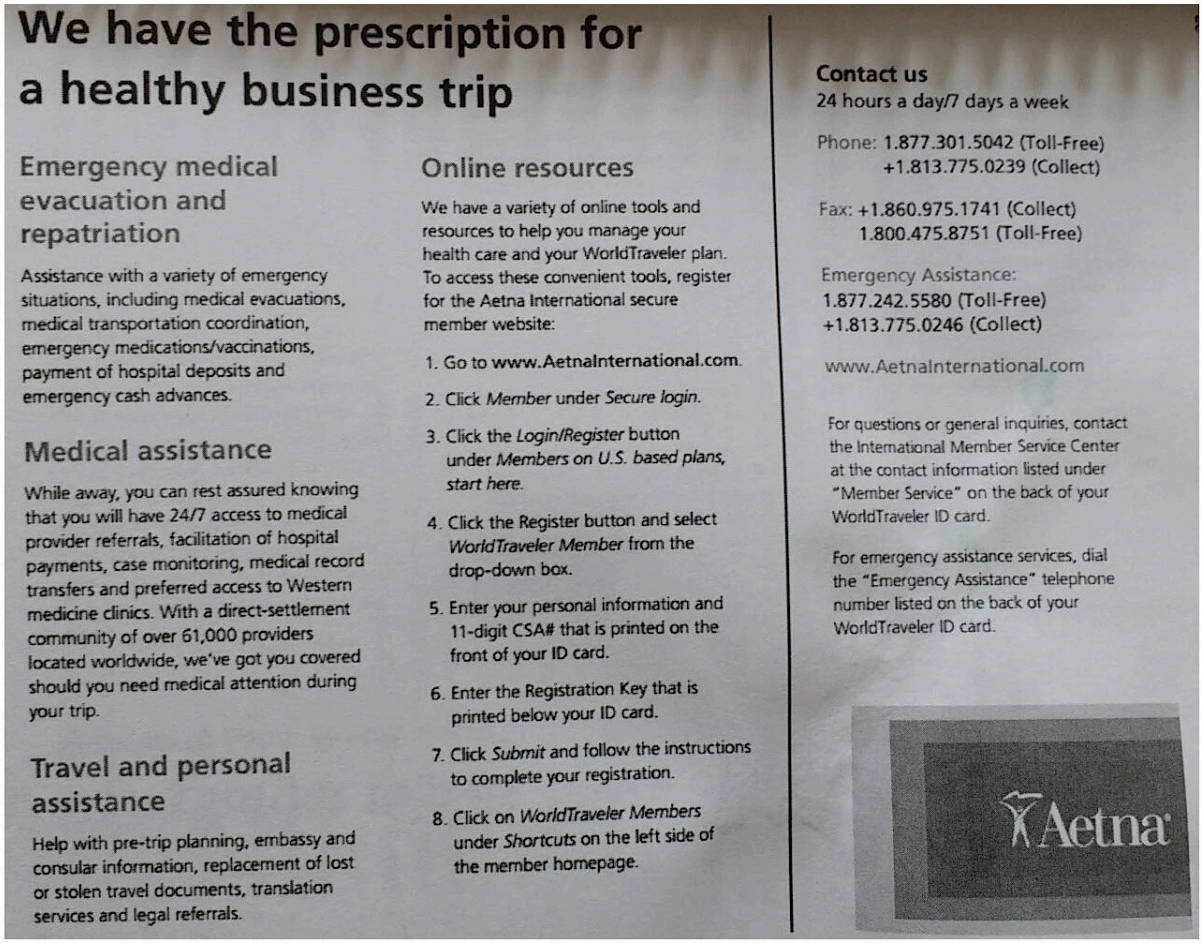
Depart/Return City: Boston

Program Fee: $7,200 *(does not include international airfare)*

**Homestay locations can vary.*

800 345-2929 experiment@worldlearning.org

Appendix J



(The Experiment in International Living, 2015b)

Appendix K

Support in the areas of health, safety, and security includes:
Our homestay families take their role in health, safety, and security of program participants very seriously. The Experiment works closely with local homestay coordinators through our partner organizations, and these homestay coordinators identify and select host families using a set of standard criteria.

Pre-departure preparation. The Experiment helps participants prepare for their program throughout the pre-departure process by providing sample itineraries, a student handbook, packing lists, travel logistics, and health guidelines that include recommendations related to immunizations and medications.

Thorough pre-departure medical screening. As an industry standard, The Experiment conducts thorough health reviews of admitted participants prior to departure. We want to ensure that participants and their parents understand the realities of their Experiment program and travel abroad informed and prepared. We operate from a position of inclusion with respect to health conditions and will work with our group leaders and international offices to accommodate just about any health-related need. In some cases, it may be difficult or impossible to accommodate a participant's health needs, but usually the participant and his or her parents come to that conclusion on their own when we explain the program. By collecting relevant health information, our group leaders and international partners are equipped to prevent health emergencies from happening and can quickly respond if they do. The Experiment has experienced physicians and staff who advise, review, and inform professional staff about current health trends, including ADA needs, both in the US and abroad.

In-country partners. Each Experiment group is supported by an extensive professional network of in-country resources that can include partner offices, international educators, homestay coordinators, in-country co-leaders, and program guides. Our partner offices help us design each program and support our groups throughout the program period. These in-country professionals have access to communications, healthcare, and transportation infrastructure to make sure that each student receives the highest quality attention and support.

Two group leaders. Each Experiment group is accompanied by two trained adult leaders. Group leaders maintain ongoing contact with all participants throughout the program and work collaboratively with our in-country partners and The Experiment office in Vermont. For more information on Experiment group leaders, please see our group leader web pages.

Comprehensive in-country orientation. Each program begins with an orientation. The orientation focuses on increasing cultural knowledge—e.g., survival language skills and in-country norms—as well as developing participants' cross-cultural communication skills and self-awareness, specifically within the context of

the host country. Whenever situations change in-country, group leaders and local partners conduct additional safety briefings to raise awareness among participants.

Travel insurance. Each student is covered by the World Learning medical insurance policy that provides accident and sickness coverage and emergency evacuation coverage. Please note that this insurance is intended to act as a secondary policy for participants who are already insured. In addition, we have access to medical advisors and other experts in international education as resources.

Ongoing monitoring. The Experiment monitors U.S. government advisories, considering those issued both by in-country embassies and consulates and by the U.S. Department of State in Washington, DC. The Experiment also consults with academic and nongovernmental organizations through the global networks of World Learning, The Experiment's parent organization, and receives strong support through World Learning's institutional risk management committee.

Homestay Standards. The homestay is a central element of any Experiment program. Families welcome and integrate program participants into the host culture through activities, events, and simple day-to-day living. By becoming a part of a local family, students are empowered to understand cultural norms and therefore are better able to navigate their intercultural experiences safely.

Twenty-four-hour on-call support. The Experiment in International Living is supported by professional student affairs staff based at The Experiment's headquarters in Brattleboro, Vermont. Our staff maintains a 24-hour on-call safety and emergency response system for any health, safety, or security concerns that might arise throughout the program. The Experiment can be reached toll-free within the US at 800 345-2929 or at 802 258-3481.

(World Learning, 2016e)

Appendix L

Incident Reporting Timing

Incidents include emergencies, medical issues, behavioral issues, and logistical issues. However, when and how to report incidents will vary depending on the severity:

Threshold I and II:	As soon as possible, within 1 business day during business hours.
Threshold III:	As soon as possible, regardless of time of day
Threshold IV and V:	Immediately, after calling for emergency response if necessary

The Threshold Model is not all-inclusive. No model can (or should) capture all of the myriad of situations that we encounter. The intent of this model is to give you a sense of how the different thresholds might ultimately be summarized, so if you feel stuck between thresholds this can serve as a handrail for you to follow.

Threshold 0: Near miss; non-incident (money, baggage)

Threshold 1: Routine incident, local management, no headquarters support needed.

Threshold 2: Routine incident, local and headquarters support needed.

Threshold 3: Unusual incident, requires direct and timely headquarters management.

Threshold 4: Threat to life or limb, urgent national response needed.

Threshold 5: Crisis, natural disaster, highest level of headquarters response. Urgently prioritized (The Experiment in International Living, 2015b).

2015 On-Call Staff: Karen Ross, Michael Bloomfield, Rachael Dean, Cassidy Moore, Maura Walsh, Jessika Macias, Christina Thomas, Jennifer Core

(The Experiment in International Living, 2015b)